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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,026	03/31/2004	Eyal Ginsburg	P-6640-US	3835
49444	7590	06/05/2006	EXAMINER	
PEARL COHEN ZEDEK LATZER, LLP 1500 BROADWAY, 12TH FLOOR NEW YORK, NY 10036			SUMMONS, BARBARA	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,026

Applicant(s)

GINSBURG ET AL.

Examiner

Barbara Summons

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 22-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-29 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 1/31/05 & 7/21/05.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of the Group I invention in the reply filed on April 26, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)), and the restriction is made FINAL.
2. Claims 22-29 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 26, 2006.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The Examiner suggests:

-- ELECTRO-MECHANICAL DEVICE HAVING A SEALED CAVITY --.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 15-19 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 is totally unclear as to what structures are attached to the first and second sides of the cap layer. For example, claim 15 first recites "a cap layer having a first side attached to said base structure and a second side attached to said membrane" (see lines 3-4), but then subsequently recites "a base structure attached to a second side of said cap layer" (line 5) when the "second side" of the cap layer was already recited as attached to the membrane. Is the second side of the cap layer attached to the base structure or the membrane? For purposes of any art rejections that follow a first side of the cap layer attached to a base structure and a second side of the cap layer attached to a membrane, will be considered to anticipate the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 14, 20 and 21 are rejected under 35 U.S.C. § 102(b) as being anticipated by the article "A Sealed Cavity TFR Process for RF Bandpass Filters" by Lutsky et al. (cited by Applicants).

Fig. 2 of the Lutsky et al. article discloses a Micro-Electro-Mechanical (MEMs) system device being a film bulk acoustic resonator (FBAR), the device comprising: a membrane comprised of a piezoelectric material that is Aluminum Nitride (AlN), wherein the membrane is attached to a support structure being the silicon support substrate

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formed of a p-type wafer and an n-type wafer (see Fig. 1 and page 4.4.2, left col., lines 1-15). Note that an FBAR is considered to be a MEMs system device because it has a size in the micrometer range and converts electrical signals to mechanical (i.e. acoustic vibration) signals.

8. Claims 1, 2, 4-9, 12-16 and 18-21 are rejected under 35 U.S.C. § 102(b) as being anticipated by Mang et al. U.S. 5,692,279.

Regarding claims 1, 5, 6, 12-14 and 20, Fig. 4 of Mang et al. discloses a MEMS system device that is an FBAR or FBAR filter (Fig.5), an FBAR being a MEMs device because it is in the size of micrometers and converts electrical signals to mechanical signals, the device comprising: a base structure 10; and a cap layer 15 attached to a top surface of the base structure and able to support one or more elements/FBARs 20 of a MEMs device; one or more cavities 12 (see col. 3, lines 35-39) encapsulated between the base structure 10 and the cap layer 15 are sealed from an external environment (see col. 2, lines 1-4; col. 3, lines 9-11 and 51-53; and col. 4, lines 1-2); and wherein the one or more elements comprise an FBAR membrane that includes layer 25 of piezoelectric material.

Regarding claim 15, the cap layer 15 has a first/lower side attached to the base structure 10 and a second/upper side attached to the FBAR membrane. Regarding claims 2 and 16, the side walls of the cavity 12 are considered to be "protrusions" that are attached to a base substrate 10 because they are integrally formed therewith, such that the one or more cavities 12 are sealed between the cap layer 15, the base substrate 10 and its protrusions extending to surface 11. Regarding claim 4, the base

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substrate 10 is a semiconductor (see col. 3, lines 29-31). Regarding claims 7 and 21, Mang et al. incorporated by reference U.S. 5,373,268 (see col. 3, lines 20-25) so that its contents become part of the Mang specification, and U.S. 5,373,268 lists the common piezoelectric layer materials that include AlN (see U.S. '268 col. 6, lines 12-16).

Regarding claims 8, 9, 18 and 19, the cap layer 15 is silicon dioxide (see col. 3, lines 55-58), which is inherently "selectively permeable" when subjected to a "predetermined condition" such as heating (see the other art of record cited below as evidence).

9. Claims 1-3, 5-7, 12-16, 20 and 21 are rejected under 35 U.S.C. §§ 102(a) and 102(e) as being anticipated by Aigner U.S. 6,657,363.

Regarding claim 3 and to avoid repetition, it should be noted that Aigner (Fig. 1) is substantially the same as Mang et al. except that the sealed cavity is formed between a cap layer 2, and a base structure comprising protrusions 3 of insulating material (see col. 3, lines 8-9) attached to the base substrate 1.

The device is a MEMs/FBAR device with an FBAR membrane having a layer 6 of piezoelectric material that is AlN (see col. 2, lines 20-21).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 10, 11 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mang et al. U.S. 5,692,279 in view of Ella U.S. 6,081,171.

Mang et al. discloses the invention as discussed above, except that the cap layer is silicon dioxide and not a piezoelectric material that is AlN (aluminum nitride).

Ella discloses that AlN support membranes for FBARs are art recognized alternatives to silicon dioxide membranes (see col. 17, lines 26-31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the FBAR device of Mang et al. (Fig. 4) such that the cap layer/FBAR support membrane 15 would have been AlN instead of silicon dioxide, because such an obvious modification would have been the mere substitution of art recognized alternative FBAR support layers as explicitly suggested by Ella (col. 17, lines 26-31).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Drabik et al. U.S. 6,469,761 provides evidence that silicon dioxide is selectively permeable, for example, to sacrificial materials, under predetermined conditions such as, for example, heating (see col. 5, lines 8-22).

Kawakubo U.S. 6,870,445 discloses FBARs over sealed cavities that are completely within the support structure substrate (see the cover figures).

Ella et al. U.S. 6,509,813 discloses FBARs over a sealed cavity without using a sacrificial material as an alternative to using a sacrificial material as described in Fig. 7.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

bs
May 26, 2006



**BARBARA SUMMONS
PRIMARY EXAMINER**